L 13571-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD

ACCESSION NR: AP3000184 S/0080/63/036/004/0800/0806 58 56

AUTHOR: Titov, V. K.; Makarov, Ye. F.

TITLE: Effect of halide 27 selection on the chrome-plating of iron 18

SOURCE: Zhurnal prikladnoy khimii, v. 36, no. 4, 1963, 800-806

TOPIC TAGS: chrome-plating technique

ABSTRACT: The experimental study shows that by increasing the atomic number of the halide which is introduced into the chrome-plating mixture, the quantity of chromium adsorbed on the surface of iron increases during the chrome plating process while the exchange factor m is expressed as follows: m = q sub 1/A sub 1 : q sub 2/A sub 2 where q sub 1 and q sub 2 is the weight of adsorbed chromium and lost iron respectively. A sub 1 and A sub 2 are their atomic weights. Thermodynamic calculation showed that the increase of quantity of chromium adsorbed when the change is made from fluoride 11 to iodide 11 is explained by the fact that, with an increase of the atomic number of a halide, a higher concentration of chromium halide in the gaseous form is observed. At the same time, the decrease of exchange factor m is explained by the decrease of chromium concentration or iron which are reduced by hydrogen. Best results are obtained

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L 13571-63

ACCESSION NR: AP3000184

2

when the test samples are saturated or directly placed into the chrome-plating mixture rather than placing them into the powder mixture. Fortunately, the grains of ferric chromate protect the iron from losses which would result in the formation of halogenates. In addition to the above, the formation of chromium halogenates directly near the surface of iron results in a higher local concentration of chromium. Thus, in order to obtain a more intensive adsorption of chromium on the surface of iron, the test samples must be placed into the chrome-plating mixture with the addition of ammonium iodide to the mixture. Orig. art. has: 1 figure, and several formulas.

ASSOCIATION: Odesskoye vyssheye inzhenernoye morskoye uchilishche (Higher Marine Engineering School of Odessa)

SUBMITTED: 23May62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: CH NO REF SOV: 009 OTHER: 007

Card 2/2

TITOV, V.K.

Distribution of radioelements in the supercrystalline formations of the Aldan Shield. Trudy VSEGEI 95:155-161 '63.

(MIRA 17:11)

TITOV, V.K.

Graduation of EM-6 scintillation emanometers with Pu^{239} preparations. Vop. rud. geofiz. no.5:128-130 '65.

A review of the present state of surface radiometric methods according to materials in the foreign press. Ibid.:146-153
(MIRA 18:9)

L 3361-66 EWT(m)/EPF(c)/EWP(i)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b) IJP(c) MJW/JD/JG

ACC NR: AP5025601 UR/0129/65/000/010/0048/0050

621.785.53:542.944

AUTHOR: Titov, V. K.; Makarov, Ye. F.

TITLE: Chromizing of steel with the aid of ammonium halides

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 10, 1965, 48-50

TOPIC TAGS: chromizing, halide, ammonium salt, atomic property, chromium steel, ferrochrome

ABSTRACT: Steel U10 was experimentally chromized in mixtures containing 40% ferrochrome + ammonium halides. The chromizing was performed in a nichrome container at 1100°C for 4 hr, with the amount of absorbed Cr being determined by the persulfate-silver method of Samsonov et al. (Analiz tugoplavkikh soyedineniy, Moscow, Metallurgizdat, 1962). Findings: The amount of absorbed Cr increases with increasing atomic weight of the halogen forming the ammonium halide; at the same time, the mean Cr concentration in the carbide layer (assuming that the entire Cr is concentrated in this layer and its density is 6.75 g/cm^3) increases, as does the depth of this layer. Steel absorbs iron from the gaseous phase, because the activity of Fe in the carbide layer is lower than in the ferrochrome. Chromizing by direct pouring of active mixture (to which NH_4I is added) onto the specimens produces better results than placement of the specimens in a chamotte layer surrounded by the chromizing

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ACC NR: AP5025601

mixture, because then we are dealing with the direct diffusion of Cr and Fe into the carbide layer of the steel in the presence of direct contact between the grains of ferrochrome and the surface of the specimen. Orig. art. has: 2 tables.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MM, GC

NO REF SOV: 006 OTHER: 001

Card 2/2

TITOV, V.K.

Analysis of chemical reactions taking place during steel siliconizing based on the thermodynamic data. Zhur. prikl. khim. 37 no. 4:768-773 Ap '64. (MIRA 17:5)

1. Odesskoye vyssheye inzhenernoye morskoye uchilishche.

TITOV, V.K.

Exchange factor as a characteristic of the mechanism of diffusion metallizing. Izv. vys. ucheb. zav.; chern. met. 7 no.3:136-142 '64. (MIRA 17:4)

1. Odesskoye vyssheye inzhenernoye morskoye uchilishche.

TITOV, V.K.; MAKAROV, Ye.F.

Chromizing steel with the use of ammonium halides.
Metalloved. i term.obr.met. no.10:48-50 O '65.
(MIRA 18:11)

DOBROGURSKIY, S.O.; TITOV, V.K.

[Calculating machines] Schetno-reshaiushchie ustroistva. Moskva, Gos. izd-vo obor. promyshl., 1953. 222 p. (MLRA 7:6)
(Calculating machines)

DOBROGURSKIY, Sergey Osipovich, prof.; KAZAKOV, Vyacheslav Antipovich, dotsent; TITOV, Viktor Konstantinovich, dotsent; PCHEL'NIKOV, N.I., prof., doktor tekhn.nauk; retsenzent; PERSUKHIN, L.N., prof., doktor tekhn.nauk, nauchnyy red.; BOGOMOLOVA, M.F., izdat.red.; ROZHIN, V.P., tekhn.red.

[Computing machines] Schetno-reshaiushchie ustroistva. Moskva, Gos.izd-vo obor.promyshl., 1959. 463 p. (MIRA 12:8)
(Calculating machines)

28(1) PHASE I BOOK EXPLOITATION SOV/2087

Elementy sistem avtomaticheskogo regulirovaniya. ch. 1: Chuvstvitel'nyye usilitel'nyye i ispolnitel'nyye elementy (Elements of Automatic Control Systems. pt. 1: Sensing, Amplifying and Control Elements) Moscow, Mashgiz, 1959. 722 p. (Series: Osnovy avtomaticheskogo regulirovaniya, t. 2) Errata slip inserted. 13,000 copies printed.

Reviewers: F. F. Galteyev, Candidate of Technical Sciences, V. A. Karasev, Doctor of Technical Sciences, P. P. Klobukov, Candidate of Technical Sciences, V. V. Petrov, Candidate of Technical Sciences, Yu. D. Ragozin, Candidate of Technical Sciences, Yu. R. Reyngol'd, Engineer, B. A. Ryabov, Doctor of Technical Sciences, B.D. Sadovskiy, Candidate of Technical Sciences, A. G. Saybel', Candidate of Technical Sciences, and A. A. Shevyakov, Candidate of Technical Sciences; Scientific Eds.: I. M. Vitenberg, Candidate of Technical Sciences, A. I. Moldaver, Candidate of Technical Sciences, and Yu. Ye. Ruzskiy, Candidate of Technical Sciences; Ed. of Series: V. V. Solodovnikov, Doctor of Technical Sciences, Professor; Eds. of Publishing House: G. F. Polyakov, A. G. Akimova, and G. M. Konovalov; Tech. Eds.: A. Ya. Tikhanov and T. F. Sokolova; Managing Ed. for Literature on Machine Building and Instrument Construction (Mashgiz): N. V. Pokrovskiy, Engineer.

PURPOSE: This book is intended for engineering and scientific personnel and for instructors of vtuzes concerned with problems of automatic control.

COVERAGE: The authors explain the principle of operation of automatic control elements and servomechanisms. They also discuss typical automatic control circuits and present equations of motion and static and dynamic characteristics of automatic control elements. They describe sensing elements, amplifiers, control elements and transducers. The book contains Sections I, II, and III of Part 1, Volume II. "Principles of Automatic Control." The following persons participated in writing the present work: D. A. Braslavskiy, Candidate of Technical Sciences, paragraph 4 of Chapter III and paragraphs 1-8 and 14 of Chapter IV; L. S. Gol'dfarb, Doctor of Technical Sciences, paragraphs 1, 2, 6 and 7 of Chapter I; A. I. Guzenko, Candidate of Technical Sciences, paragraph 1 of Chapter VIII; K. Ye. Dmitriyev, Candidate of Technical Sciences, paragraph 2 of Chapter XIII; V. A. Kalashnikov, Engineer, Chapter XIV; P. P. Klobukov, Candidate of Technical Sciences, paragraphs 2 and 3 of Chapter VIII; P. F. Klubnikin, Candidate of Technical Sciences, Chapter XII; A. M. Krassov, Candidate of Technical Sciences, paragraph 1 of Chapter XIII, and Chapter XIV; D. S. Pel'por, Doctor of Technical Sciences, paragraphs 1-3 of Chapter III; V. V. Petrov, Candidate of Technical Sciences, paragraph 1 of Chapter XIII, and Chapter XIV; M. A. Rozenblat, Doctor of Technical Sciences, Chapter VII; Yu. Ye. Ruzskiy, Candidate of Technical Sciences, paragraphs 1, 3-5 and 8-10 of Chapter 1, paragraphs 2-5, 12, 13 and 17 of Chapter II, paragraph 3 of Chapter XIII, and Chapter IX; B. D. Sadovskiy, Candidate of Technical Sciences, paragraphs 1 and 2 of Chapter X; A. A. Sokolov, Candidate of Technical Sciences, Chapter VI; V. K. Titov, Candidate of Technical Sciences, paragraphs 9-13 of Chapter IV, paragraph 4 of Chapter X, and Chapter XI; G. M. Ulanov, Candidate of Technical Sciences, paragraph 1 of Chapter II; Ye. V. Filipchuk, Candidate of Technical Sciences, paragraphs 6-11, 14-16 and 18-29 of Chapter II; A. Ye. Kharybin, Candidate of Technical Sciences, Chapter V; and V. A. Khokhlov, Candidate of Technical Sciences, paragraph 1 of Chapter IX and paragraph 1 of Chapter XIII. References appear at the end of each chapter.

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Elements of Automatic Control Systems (Cont.) SOV/2057

TITOV, V.K.

Analysis of the operation of a.c. automatic control systems using equivalent d.c. transfer functions. Avtom. upr. i vych. tekh. no.5:120-150 '62. (MIRA 15:9)

(Automatic control)

KLUBNIKIN, Petr Fedorovich; TITOV, V.K., kand. tekhn. nauk, retsenzent; AKIMOVA, A.G., red. izd-va; TIKHANOV, A.Ya., tekhn. red.

[Quick-acting induction clutches used in automatic control systems] Bystrodeistvuiushchie induktsionnye mufty v sistemakh avtomaticheskogo regulirovaniia. Moskva, Mashgiz, 1962. 218 p. (MIRA 15:3)
(Clutches (Machinery)) (Automatic control)

RUZSKIY, Yu.Ye., kand. tekhn. nauk; SOLODOVNIKOV, V.V., doktor tekhn. nauk, prof.; TITOV, V.K., kand. tekhn. nauk; TUPCHEYEV, Yu.I., kand. tekhn. nauk; YELISEYEV, M.S., inzh., red.; MODEL', B.I., tekhn. red.

[Principles of automatic control] Osnovy avtomaticheskogo upravleniia. Moskva, Mashgiz. Vol.3. [Automatic controllers and servo systems] Avtomaticheskie reguliatory i slediashchie sistemy. 1963. 569 p. (MIRA 17:2)

AM4033667 BOOK EXPLOITATION S/

Ruzskiy, YU. YE. (Candidate of Technical Sciences); Solodovnikov, V. V. (Doctor of Technical Sciences, Professor); Titov, V. K. (Candidate of Technical Sciences); Topcheyev, YU. I. (Candidate of Technical Sciences)

Principles of automatic control. v. 3: Automatic regulators and servomechanisms (Osnovy* avtomaticheskogo upravleniya. t. 3: Avtomaticheskiye regulyatory* i sledyashchiye sistemy*) Moscow, Mashgiz, 63. 0659 p. illus., biblio., index. Errata slip inserted. 11,300 copies printed.

TOPIC TAGS: automatic control equipment, automatic regulation, servomechanism, hydraulic control, pressure control, electronic control

PURPOSE AND COVERAGE: The book considers automatic regulators and servomechanisms used in industry and contains typical diagrams, construction elements, main static and dynamic characteristics of these elements, and some features governing the choice of parameters of these regulators and servomechanisms and recommendations with respect to their use. Experimental dynamic characteristics are presented for most automatic regulators and servomechanisms. The book is intended for engineering-technical and scientific workers, instructors, and graduate or senior students

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AM4033667

engaged in automatic regulation and control. Chs. II, III, IV, and V were written by Candidate of Technical Sciences Yu. Ye. Ruzskiy. The introduction and Ch. I were written by Doctor of Technical Sciences V. V. Solodovnikov. Ch. VII was sritten by Candidate of Technical Sciences V. K. Titov. Chs. VI, VIII, IX were written by Candidate of Technical Sciences Yu. I. Topcheyev.

TABLE OF CONTENTS [abridged]:

AM4033667

Literature - - 635
Sub. index - - 666

SUB CODE: IE SUBMITTED: 14Nov63 NR REF SOV: 0278

OTHER: 0274 DATE ACQ: 06Apr64

Card 3/3

BUCHNEV, K.N., prof.; SHAKHMATOV, M.M., kand. veterinarnykh nauk; TITOV, V.L., nauchnyy sotrudnik; MEN'SHIKOV, L.F., nauchnyy sotrudnik; KRIVENKO, O.P., vrach-laborant; VOVK, V.I., vrach-laborant; LAISHEVA, M.M., vrach-laborant; POLUBOYAROVA, G.V., vrach-laborant

Diagnosis of rabies by precipitation reaction in agar gel. Veterinariia 40 no.3:66-70 Mr '63. (MIRA 17:1)

1. Alma-Atinskiy zooveterinarnyy institut (for Buchnev).
2. Laboratoriya virusologii nauchno-issledovatel'skogo veterinarnogo instituta Kazakhskoy akademii sel'skokhozyaystvennykh nauk (for all except Buchnev).

OSTOSLAVSKIY, I.V., zasluzhennyy deyatel' nauki i tekhniki, doktor tekhnicheskikh nauk, professor; TITOV, V.M., kandidat tekhnicheskikh nauk; RODZEVICH, S.S., redaktor; LARIONOV, G.Ye., tekhnicheskiy redaktor

[Aerodynamical computations for aircraft] Aerodinamicheskii raschet samoleta. Moskva, Oborongiz, Glavnaia red. aviatsionnoi lit-ry, 1947. 354 p. [Microfilm] (MIRA 9:11)
(Airplanes--Aerodynamics)

PHASE I BOOK EXPLOITATION SOV/4581

Leningrad. Glavnaya geofizicheskaya observatoriya

Voprosy dinamicheskoy meteorologii i teorii klimata (Problems in Dynamic Meteorology and the Theory of Climate) Leningrad, Gidrometeoizdat, 1958. 125 p. (Series: Its: Trudy, vyp. 76) Errata slip inserted. 1,300 copies printed.

Sponsoring Agency: Glavnaya geofizicheskaya observatoriya imeni A.I. Voyeykova; Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri Sovete Ministrov SSSR.

Ed. (Title page): M.I. Yudin, Doctor of Physics and Mathematics; Ed. (Inside book): Yu.V. Vlasova; Tech. Ed.: M.Ya. Flaum.

PURPOSE: This issue of the Transactions of the Main Geophysical Observatory is intended for dynamic and synoptic meteorologists and climatologists. It may also be used by students of these fields.

COVERAGE: The collection of 9 articles deals with problems in dynamic meteorology, the theory of climate, and the forecasting of air temperature using elements of the thermohydrodynamic theory. A system of climatological regionalization for

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the USSR is analyzed and recent pertinent data in this regard shown graphically. No personalities are mentioned. References follow each article.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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JA/dwm/gmp
12-16-60

TITOV, V.M.

Relation between variations in surface pressure and the altitudes of isobaric surfaces of the lower troposphere. Trudy GGO no.143:27-35 '63. (MIRA 17:2)

ACCESSION NR: AT4016870 S/2531/63/000/143/0027/0035

AUTHOR: Titov, V. M.

TITLE: The relationship between surface pressure and the heights of isobaric surfaces of the lower troposphere.

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy*, no. 143 1963, Voprosy* chislennogo prognoza i struktura meteorologicheskikh poley, (Problems in numerical forecasting and structure of meteorological fields). 27-35

TOPIC TAGS: meteorology, atmospheric pressure, isobaric surface, troposphere, lower troposphere, surface pressure, regression function, weather forecasting.

ABSTRACT: A study has been made to determine the statistical relationships between the temporal change of surface pressure and the heights of the 850 and 500 millibar isobaric surfaces. Multiple regression functions are used to determine future values of surface pressure. The problem reduces to finding the coefficients a, b and c in the multiple regression equation

$$\delta p = a + b\delta H_5 + c\delta H_{8.5}, \quad (1)$$

where δ p are the 1-day or 2-day changes in surface pressure; δH_5 and $\delta H_{8.5}$ are

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MAIN GEOPHYSICAL OBSERVATORY

the analagous changes in the height of the 500- and 850-mb surfaces. The coefficient b characterizes the relationship between the change of AT_{500} and surface pressure, c — the relationship between AT_{850} and surface pressure. Regression equations are written separately for continental and ocean areas (Europe and Atlantic Ocean). A "Ural-1" computer was employed. The following formulas, derived by the least squares method, were used in programming:

$$D = \left[\overline{\delta H_5 \delta H_{0,5}} - \overline{\delta H_5}\,\overline{\delta H_{0,5}}\right]^2 - \left[\overline{\delta H_5^2} - \overline{\delta H_5}^2\right]\left[\overline{\delta H_{0,5}^2} - \overline{\delta H_{0,5}}^2\right]$$

$$D_1 = \left[\overline{\delta H_5 \delta H_{0,5}} - \overline{\delta H_5}\,\overline{\delta H_{0,5}}\right]\overline{\delta H_5 \delta p} -$$

$$- \left[\overline{\delta H_5^2} - \overline{\delta H_5}^2\right]\overline{\delta H_{0,5}\,\delta p} + \left[\overline{\delta H_{0,5}}\,\overline{\delta H_5^2} - \overline{\delta H_5}\,\overline{\delta H_5 \delta H_{0,5}}\right]\delta p$$

$$D_2 = \left[\overline{\delta H_5 \delta H_{0,5}} - \overline{\delta H_5}\,\overline{\delta H_{0,5}}\right]\overline{\delta H_{0,5}\,\delta p} -$$

$$- \left[\overline{\delta H_{0,5}^2} - \overline{\delta H_{0,5}}^2\right]\overline{\delta H_5 \delta p} - \left[\overline{\delta H_{0,5}}\,\overline{\delta H_5 \delta H_{0,5}} - \overline{\delta H_5}\,\overline{\delta H_{0,5}^2}\right]\delta p$$

$$D_3 = \left[\overline{\delta H_{0,5}^2}\,\overline{\delta H_5} - \overline{\delta H_5 \delta H_{0,5}}\;\overline{\delta H_{0,5}}\right]\overline{\delta H_5 \delta p} -$$

$$- \left[\overline{\delta H_5 \delta H_{0,5}}\;\overline{\delta H_5} - \overline{\delta H_5^2}\,\overline{\delta H_{0,5}}\right]\overline{\delta H_{0,5}\,\delta p} -$$

$$- \left[\overline{\delta H_5}\,\overline{\delta H_{0,5}^2} - \overline{\delta H_5 \delta H_{0,5}}\right]\delta p. \qquad (2)$$

ACCESSION NR: AT4016870

The required coefficients were found using the relations:

$$a=\frac{D_3}{D},\ b=\frac{D_2}{D},\ c=\frac{D_1}{D}. \qquad (3)$$

Data for the continent were taken from synoptic charts at 110 points on a regular grid. The initial data were for AT_{500}, AT_{850} and the surface for 10 days of the middle month of each season. The actual changes of surface pressure and the 500- and 850-mb surfaces for 24- and 48-hour periods were computed. A far less perfect grid was available for the ocean area. The regression coefficients were determined using formulas (2) and (3). Tables give the regression coefficients a, b and c for individual days, their mean values, mean square deviation and maximum and minimum values. There is a stable relationship between changes at the surface and at the 850-mb level. Comparison of the mean square deviation and mean 10-day value of c shows that it varies little from day to day and season to season. In both cases the variability of c over the ocean is somewhat greater than over land. The coefficient b varies greatly from day to day and season to season. There is no reliable relationship between pressure at the surface and at the 500-mb level. The coefficient a (a free term) changes considerably from day to day and season to season. Orig. art. has: 2 figures, 3 formulas and 5 tables.

Card 3/4

VASIL'YEV, O.F.; PRITVITS, N.A.; TITOV, V.M.

Some hydronamic calculations relating to methods for controlling larvae of blood-sucking midges in rivers. Izv.Sib.otd.AN SSSR no.8:124-134 '60. (MIRA 13:9)

1. Institut gidrodinamiki Sibirskogo otdeleniya AN SSSR.
(Insecticides)

TITOV, V.N., inzhener.

The TR-4 tractor leader for inert materials. Strel.i der.mashinostr.no.7: 30-32 Jl '56. (Industrial power trucks) (MLRA 9:10)

TITOV, V.N., inzhener.

Modernizing the D-182A concrete finishing machine. Stroi. i dor. mashinostr. 2 no.6:19-21 Je '57. (MLRA 10:6)
(Pavements, Concrete)

KOVYLIN, Yu. Ya.; SURKOV, G. V.; TITOV, V. N.

Composite suspension of vibratory hoppers and hoists. Mekh. i instr. 35 no.5:25-27 My '64. (MIRA 17:7)

KHOMULLO, G.V.; TIPOV, V.N.

Morphological functional changes in some endocrine organs under the influence of dicoline. Probl. endok. i gorm. 11 no.2:89-93 Mr-Ap '65. (MIRA 18:7)

1. Kafedra obshchey biologii (zav. - dotsent G.V.Khomullo) i kafedra gospital'noy terapii (zav. - prof. I.B.Shulutko) Kalininskogo meditsinskogo instituta.

REVIS, V.A.; TITOV, V.N.

Protein metabolism of the liver and kidneys in acute radiation sickness according to histoautoradiography data. Med. rad. 9 no.11:54-61 N '64. (MIRA 18:9)

1. Klinika fakul'tetskoy khirurgii (zav.- prof. V.S. Semenov) Kalininskogo meditsinskogo instituta i Oblastnaya klinicheskaya bol'nitsa.

L 63586-65 EPF(c)/EPR/EPA(s)-2/EWT(m)/T/EWP(j) Pc-4/Pr-4/Ps-4/Pt-10 RM

ACCESSION NR: AT5002671 S/0000/64/000/000/0167/0170

AUTHOR: Titov, V. N.; Tverdokhleb, L. L.

TITLE: Glass-reinforced plastics with high strength

SOURCE: AN UkrSSR. Institut khimii vysokomolekulyarnykh soyedineniy. Sintez i fiziko-khimiya polimerov; sbornik statey po rezul'tatam nauchno-issledovatel'skikh rabot (Synthesis and physical chemistry of polymers; collection of articles on the results of scientific research work). Kiev, Naukova dumka, 1964, 167-170

TOPIC TAGS: glass plastic, glass reinforcement, wheel winding, glass tape, wheel reinforcement, fiberglass

ABSTRACT: The authors report the results of studies of various methods of preparing glass-reinforced plastics with an ultimate strength of up to 17,170 bar. The samples were tested in the form of wheels with a rectangular cross section, made out of alkali-free Steklonit No. 20 with EFB-4 binder and reinforced with various types of fiberglass winding. The nature of wheel destruction under compressive loads is discussed in relation to the type of winding. Tests of more than 110 samples, the average strength of which was 15,800 bar, showed

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ACCESSION NR: AT5002671

that maximal wheel strength is obtained if the axis of the reinforcing fibers is at an angle of $\pi/2$ radians to the angle of rotation of the wheel (in this way, the reinforcing fibers lie in the plane of the load). The average strength of 25 wheels wound with 3 layers of fiberglass tape, either the same width as the wheel or 1-1.25 mm in width, was 17,170 bar, and the wide tape proved more durable. Wheels can also be reinforced effectively by transverse winding. Orig. art. has: 3 figures.

ASSOCIATION: Institut mekhaniki AN UkrSSR (Mechanics Institute, AN UkrSSR)

SUBMITTED: 22 Jun64 ENCL: 00 SUB CODE: MT

NO REF SOV: 002 OTHER: 001

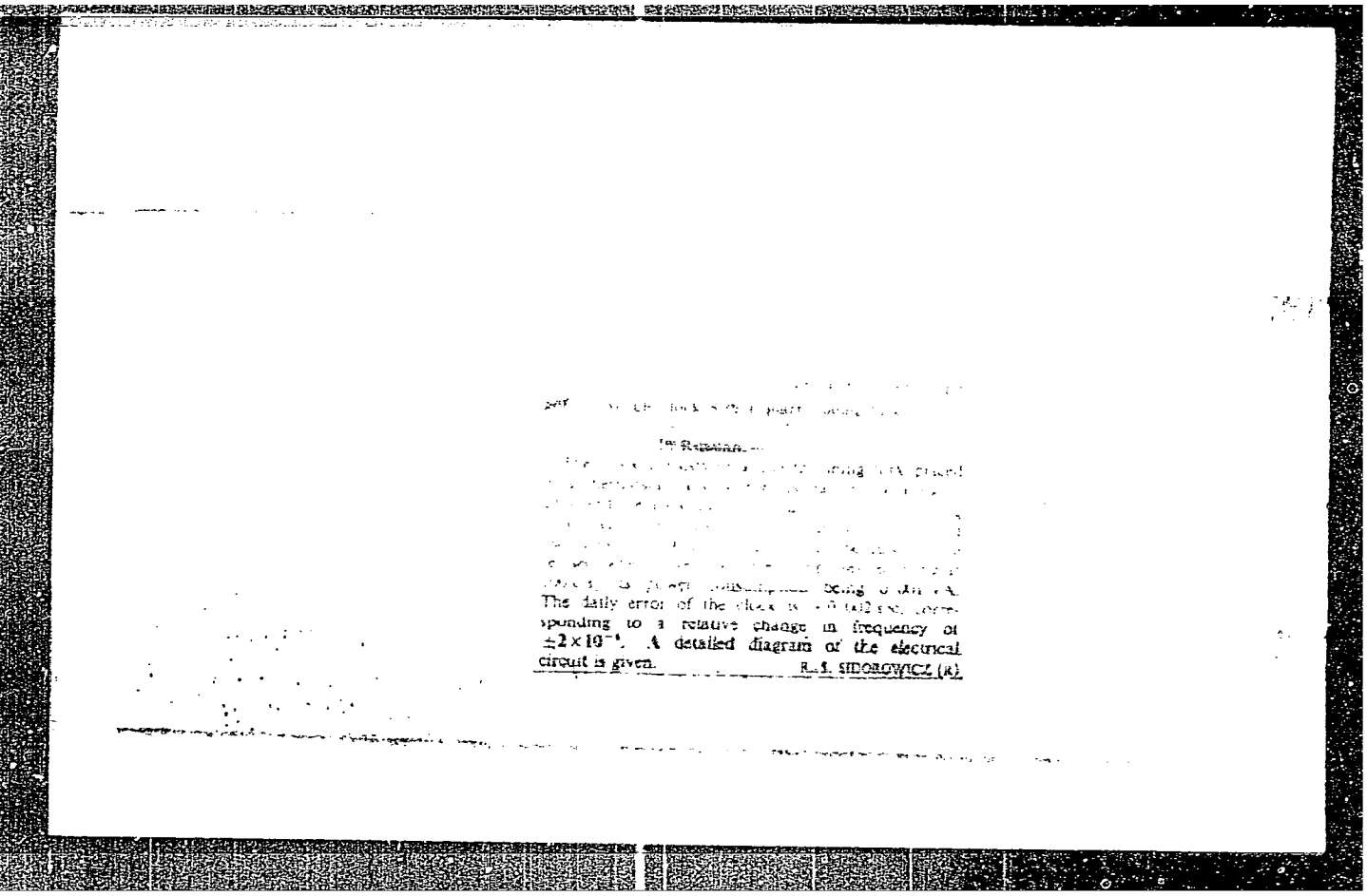
Card 2/2

TITOV, V. N.

Astrometry

Dissertation: "Simple Tuning Quartz Clock." Cand Tech Sci, All-Union Res Inst of Metrology, Leningrad, 1953. (Referativnyy Zhurnal--Astronomiyn, Moscow, Mar 54)

SO: SUM 213, 20 Sept 1954



spanning to a relative change in frequency of $\pm 2 \times 10^{-4}$. A detailed diagram of the electrical circuit is given.

R. L. SIMONOVICZ (R)

Titov V. N.

USSR/General Problems - Method and Technique of Investigation A-4

Abst Journal : Referat Zhur - Fizika, No 12, 1956, 33681

Author : Bryzhayev, L. D., Titov, V. N.

Institution : None

Title : Experimental Specimen of Underground Quartz Group Frequency Standard Using Transistors

Original Periodical : Izmerit. Tekhnika, 1955, No 1, 23-24

Abstract : A 60 kc standard frequency oscillator is built, using type KSV-3 transistors. The quartz element of the oscillator is a slab of square cross section, carrying out longitudinal oscillations at the second harmonic. The Q of the quartz element is approximately 300,000. The oscillator is fed from a dry cell and the voltage is stabilized by a standard cell operating under buffer conditions. A group of 4 identical oscillators is mounted in a special metallic shell 1.4 mm long and 90 mm in diameter, which is lowered in an underground well at a depth of 25 m. The mean-squared values of the daily variations of the relative deviations from the mean frequency value did not exceed 1.0×10^{-9}.

Card 1/1

BRYZZHEV,L.D.; GRINENKO,I.V.; NOVGORODOV,Ye.D.; TITOV,V.N.

Piezoelectric tuning forks. Izm. tekh. no.1:46-51 Ja-F '55.
(Piezoelectricity) (MLRA 8:9)

TITOV, V.N.

An electronic reductor for producing sidereal time frequencies.
Izm. tekh. no.2:26-28 Mr-Ap '55. (MIRA 8:9)
(Electronic measurements) (Time--Measurement)

BRYZZHEV, L.D.; TITOV, V.N.

Experimental model of the underground quartz crystal-triode frequency standard. Izm.tekh. no.1:23-24 Ja-F '56. (MLRA 9:5)
(Frequency measurements)

TITOV, V.N.

Instrument for precise comparison of frequencies having a value ration close to an integer. Izm.tekh.no.1:76-77 Ja-F '57. (MLRA 10:4)
(Electronic instruments) (Frequency measurements)

Titov, V.N.

24(0); 5(4); 6(2) PHASE I BOOK EXPLOITATION SOV/2215

Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii imeni D.I. Mendeleyeva

Referaty nauchno-issledovatel'skikh rabot; sbornik No.2 (Scientific Research Abstracts; Collection of Articles, Nr 2) Moscow, Standartgiz, 1958. 139 p. 1,000 copies printed.

Additional Sponsoring Agency: USSR. Komitet standartov, mer i izmeritel'nykh priborov.

Ed.: S. V. Reshetina; Tech. Ed.: M. A. Kondrat'yeva.

PURPOSE: These reports are intended for scientists, researchers, and engineers engaged in developing standards, measures, and gages for the various industries.

COVERAGE: The volume contains 128 reports on standards of measurement and control. The reports were prepared by scientists of institutes of the Komitet standartov, mer i izmeritel'nykh priborov pri Sovete Ministrov SSSR (Commission on Standards, Measures, and Measuring Instruments under the USSR Council of Ministers). The participating institutes are: VNIIM - Vsesoyuznyy nauchno-issledovatel'skiy metrologii imeni D.I. Mendeleyeva (All-Union Scientific Research Institute of Metrology imeni D.I. Mendeleyev) in Leningrad; Sverdlovsk branch of this institute; VNIIK - Vsesoyuznyy nauchno-issledovatel'skiy institut Komiteta standartov, mer i izmeritel'nykh priborov (All-Union Scientific Research Institute of the Commission on Standards, Measures, and Measuring Instruments), created from MGIMIP - Moskovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Moscow State Institute of Measures and Measuring Instruments) October 1, 1955; VNIIFTRI - Vsesoyuznyy nauchno-issledovatel'skiy institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy (All-Union Scientific Research Institute of Physicotechnical and Radio-engineering Measurements) in Moscow; KhGIMIP - Khar'kovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Khar'kov State Institute of Measures and Measuring Instruments); and NGIMIP - Novosibirskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Novosibirsk State Institute of Measures and Measuring Instruments). No personalities are mentioned. There are no references.

Card 10/27

KLYUMEL', M.Z.; TITOV, V.N.

Determining the frequency of a not absolutely harmonic process in connection with the measurement of frequencies of highly stable oscillators. Trudy inst.Kom.stand., mer i izm.prib. no.59:7-10 '62. (MIRA 16:1)

(Frequency measurements)

TITOV, V.N.

Spectral clearness of the output signal of a two-stage frequency multiplier. Trudy inst.Kom.stand., mer i izm.prib. no.59(11-15 '62.

(Frequency multipliers) (MIRA 16:1)

KLYUMEL', M.Z.; TITOV, V.N.; YELKIN, G.A.

Methods for immediate production of accumulated and differentiated frequencies. Trudy inst.Kom.stand., mer i izm.prib. no.59:16-17 '62. (MIRA 16:1)

(Frequency changers)

TITOV, V.N.

Effect of noises on the frequency instability of quartz oscillators. Trudy inst.Kom.stand., mer i izm.prib. no.59: 84-93 '62. (MIRA 16:1)

(Oscillators, Crystal--Noise)

L 27409-65 FBD/EWT(...)/EEC-...ESD(t) Pe-5/Pi-4/Pae-2 GW/WS

ACCESSION NR: AP5005354 S/0109/65/010/002/0364/0367

AUTHOR: Rzhiga, O. N.; Slobodenyuk, G. I.; Titov, V. N.; Trunova, Z. G.

TITLE: Decimeter-band radiometer and measurement of radiation from Jupiter

SOURCE: Radiotekhnika i elektronika, v. 10, no. 2, 1965, 364—367

TOPIC TAGS: planetary radiation, radiation measurement, radiometer, modulated radiometer, radiation flux / Virgo A, Jupiter

ABSTRACT: Measurements of 700-Mc radiation intensity from Jupiter were made in ...tober 1963 with a modulated radiometer. The antenna system consisted of two identical antennas oriented in the same direction with their feed ... connected through a double T-joint. The outputs of the latter were alternately connected to the receiver through an antenna switch. A square-law detector, a modulation-frequency ... (passband, 10 cps) a synchronous detector ... the RC integrating ... d-c amplifier, and a recorder made up the ... equipment. ... sure.) To eliminate spurious signals, rectangular modulating voltage ... to the grid of an i-f tube of the amplifier. The radiometer was ... noise generator; its fluctuation ...

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L 27409-65

ACCESSTION NR: AP5005354

stant of 15 sec. The intensity of radiation received from Jupiter was determined from a standard noise signal calibrated by means of a [illegible] A. The radiation flux density and spectral index of Jupiter at 20 cps, 30 x 10^-26 w/m^2 cps and -0.72) were adjusted to the frequency of the measurements. The equivalent temperature was determined as [illegible] servations confirm the pattern of [illegible] of the variation of radiation intensity with wavelength and 3 formulas.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR (Institute of Radio Engineering and Electronics, AN SSSR)

SUBMITTED: 24Feb64 ENCLOSURE: 01 SUB CODE: AA EC

NO REF SOV: 002 ACC [illegible]

Card 2/3

L 34001-66 EWP(e)/EWT(m) WH

ACC NR: AR6017178 SOURCE CODE: UR/0058/65/000/012/A017/A017

AUTHOR: Titov, V. N.

TITLE: On the development of work on the measurement of time and frequency in the SSSR

SOURCE: Ref. zh. Fizika, Abs. 12A187

REF SOURCE: Tr. in-tov Gos. kom-ta standartov, mer i izmerit. priborov SSSR. vyp. 76(136), 1965, 180-183

TOPIC TAGS: scientific standard, metrology, time measurement, quartz clock, electronic research facility

ABSTRACT: The author reports work done on the construction of quartz clocks and also molecular and atomic frequency standards, connected with the creation and maintenance of time and frequency standards; work on astronomical observations aimed at duplicating the time scale (TU_2 and ephemerides). It is shown that molecular and atomic standards with a group of quartz generators constitute the VNIIFTRI group mainainer of time and frequency, the errors of which are at the presently attainable levels of modern technology and metrology. It is noted that the institutes of the State Committee on Standards, Measures, and Measuring Instruments are engaged in the creation and introduction of various types of model apparatus for the measurement of time and frequency. Yu. Vaysberg [Translation of abstract]

SUB CODE: 20

Card 1/1

L 44679-66 EWT(m)

ACC NR: AP6005361 SOURCE CODE: UR/0413/66/000/001/0106/0106

AUTHORS: Belov, Ye. M.; Gorodilov, V. M.; Minayev, I. G.; Titov, V. N.

ORG: none

TITLE: Ionization pulse gas analyzer detector. Class 42, No. 177681 [announced by Tomsk Polytechnic Institute of the Order of the Workers' Red Banner (Tomskiy ordena trudovogo krasnogo znameni politekhnicheskiy institut)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 106

TOPIC TAGS: gas analyzer, gas composition analyzer, gas ionization

ABSTRACT: This Author Certificate presents an ionization pulse gas analyzer detector containing a chamber with two coaxial electrodes. An ionization source, e.g., an α-emitter, is located inside the chamber. To increase the sensitivity of the detector to electronegative gases (e.g., oxygen in argon), the ionization source is located at the bottom of an annular slot in the insulating end cover of the chamber (see Fig. 1).

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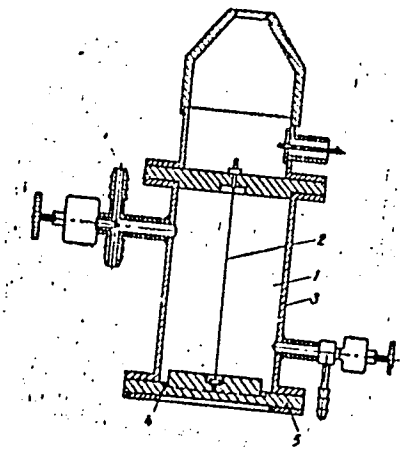
UDC: 543.51.08

L 44679-66
ACC NR: AP6005361

Fig. 1. 1 - chamber; 2 and 3 - coaxial electrodes; 4 - ionization source; 5 - end cover



Orig. art. has: 1 diagram.

SUB CODE: 07/ SUBM DATE: 22Dec64

hs

Card 2/2

ACC NR: AT6020230 (N) SOURCE CODE: UR/2589/65/000/077/0005/0015

AUTHOR: Titov, V. N. (Candidate of technical sciences)

ORG: none

TITLE: Development, manufacture, and investigation of quartz clocks of VNIIFTRI

SOURCE: USSR. Komitet standartov, mer i izmeritel'nykh priborov. Trudy institutov Komiteta, no. 77(137), 1965. Issledovaniya v oblasti izmereniya vremeni i chastoty (Research in the field of time and frequency measurement), 5-15

TOPIC TAGS: quartz clock, quartz, quartz crystal, time, time measurement

ABSTRACT: This paper is a review of the development, manufacture, and performance of a number of quartz clocks installed in 1961 by VNIIFTRI. The quartz clock installations are discussed under the following headings: 1) quartz generators and thermostats; 2) schemes for continuous (integral) frequency comparisons; 3) frequency dividers; 4) installations insuring uninterrupted voltage supply; 5) auxiliary equipment. Each chapter contains several block diagrams illustrating the various types of equipment used. The performance of the clocks was compared with the time signals of the British radio station GBR. It was found that the diurnal frequency variation of the generators was on the order of a few units of 10^{-11}. A. N. Smirnov, N. V. Nikitin, S. V. Shustrov, and employees of VNIIFTRI participated

UDC: 621.373.5.08:529.786

Card 1/2

ACC NR: AT6020230

in the construction of the quartz clocks. Orig. art. has: 1 table, 7 graphs, and 11 equations.

SUB CODE: 09, 11, 14/ SUBM DATE: --Feb62

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TITOV, V.N.

[In the struggle for technological progress; work practices of a provincial party organization] V bor'be za tekhnicheskii progress; iz opyta raboty oblastnoi partinoi organizatsii, Kiev, Gospolitizdat USSR, 1960. 96 p. (MIRA 14:12)
(Technological innovations)
(Kharkov Province--Communist Party of the Soviet Union--Party work)

TITOV, Vitaliy Nikolayevich [Titov, V.M.]; BABENKO, V.G. [Babenko, V.H.], red.; LIMANOVA, M.I. [Lymanova, M.I.], tekhn.red.

[For the further economic development of Kharkov Province] Za dal'she pidnesennia ekonomiky Kharkivshchyny. Kharkiv, Kharkivs'ke knyzhkove vyd-vo, 1959. 45 p. (MIRA 13:4)

1. Sekretar Kharkivs'kogo obkomu KP Ukraini (for Titov).
(Kharkov Province--Economic conditions)

TITOV, V.N.; MIKHAYEVICH, N.A., red.; LIMANOVA, M.I., tekhnicheskiy red.

[Kharkov region on the eve of the fortieth anniversary of the Great October Revolution] Khar'kovshchina nakanune sorokaletiia Velikogo Oktiabria; materialy v pomoshch' propagandistam i agitatoram. [Khar'kov] Khar'kovskoe obl.izd-vo, 1957. 89 p. (MIRA 11:4)

1. Sekretar' Khar'kovskogo obkoma Kommunisticheskoy partii Ukrainy (for Titov)
(Kharkov Province--Economic conditions)

TT7a, c 11

PHASE I BOOK EXPLOITATION SOV/5452

Donskoy, Ya. Ye., G.I. Kardash, and I.P. Lyalyuk, eds.

Mekhanizatsiya i avtomatizatsiya; sbornik statey ob opyte vnedreniya mekhanizatsii i avtomatizatsii na khar'kovskikh mashinostroitel'nykh zavodakh (Mechanization and Automation; Collection of Articles on the Introduction of Mechanization and Automation in Khar'kov Machinery-Manufacturing Plants) [Khar'kov] Khar'kovskoye knizhnoye izd-vo, 1960. 373 p. 3,900 copies printed.

Editorial Board: S.A. Vorob'yev, Candidate of Technical Sciences; Chairman of the Editorial Board: P.I. Zmaga, Engineer; A.A. Katlov, Engineer, V.I. Kuzubov, Engineer, A. Ye. Leonov, Docent, A.I. Tupitsyn, Candidate of Technical Sciences, and S.M. Khmara, Candidate of Technical Sciences; Eds.: Ya. Ye. Donskoy, G.I. Kardash, and I.P. Lyalyuk; Tech. Ed.: M.I. Limanova.

PURPOSE: This collection of articles is intended for technical and scientific personnel, outstanding workers, and shock workers of communist labor.

COVERAGE: The multifaceted experience of Khar'kov enterprises in the mechanization, automation, and improvement of manufacturing processes is generalized.

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Mechanization and Automation (Cont.) SOV/5452

The development of new machines, instruments, and production methods is considered and attention is given to newly established enterprises, and to the introduction of telemechanics in the Khar'kov gas-system management. By including concrete examples and facts, the authors of the various articles attempt to demonstrate the achievements of the Khar'kov industrial complex in fulfilling the resolutions of the June (1959) and July (1960) Plenums of the Central Committee of the Communist Party of the Soviet Union. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

Mechanization and Automation (Cont.)

Mechanization and Automation (Cont.) SOV/5452

Tumanov, A.G. [Chief of the Administration of the Gas Industry of the Khar'kov Sovnarkhoz]. The Introduction of New Technology and Processes in Gas Production 371

AVAILABLE: Library of Congress (TJ1160.M395)

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VK/wrc/mas
8-10-61

TITOV, V.N.; BABENKO, V.M.

Basic structural characteristics of the Northern Kantau deposit in the Kansay ore province. Geol. rud. mestorozh. no.2:109-118 Mr-Ap '61. (MIRA 14:5)

1. Institut tsvetnykh metallov im. M.I.Kalinina i Kansayskoye rudoupravleniye.
(Kara-Mazar Mountain—Geology, Economic)

TITOV, V.N.

Characteristics of the geological structure and the primary dispersion aureoles of the Okurdavan lead-zinc deposits. Izv. vys. ucheb. zav.; tsvet. met. 4 no. 1:9-16 '61. (MIRA 14:2)

1. Krasnoyarskiy institut tsvetnykh metallov, kafedra mestorozhdeniy poleznykh iskopayemykh.
(Tajikistan--Ore deposits) (Nonferrous metals)

TITOV, V.N.

Geology of the Shevchukovskoye deposit in the Kansay ore field. Geol. rud. mestorozh. 5 no.6:101-104 N-D'63. (MIRA 17:5)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut gornokhimicheskogo syr'ya, g. Lyubertsy, Moskovskoy obl.

ZAVOROTNYKH, I.R.; TITOV, V.N.

Geology of the deposits of the Pokrovsko-Surskoye ore field.
Trudy IGEM no.83:238-264 '63. (MIRA 16:11)

SOV/89-5-2-20/36

AUTHOR: Titov, V. N.

TITLE: All-Union Universities' Conference on Electron Accelerators (Vsesoyuznaya mezhvuzovskaya konferentsiya po elektronnym uskoritelyam)

PERIODICAL: Atomnaya energiya, 1958, Vol. 5, Nr 2, pp. 189-191 (USSR)

ABSTRACT: A conference on electron accelerators took place from February 15 to February 20, 1958 at the Polytechnic Institute of Tomsk (TPI). More than 50 Higher Technical Schools and Research Institutes attended this conference. 146 lectures were held in plenary- as well as in sectional sessions.
The construction of the Transformer Factory of Moscow (MTZ) concerning special betatrons (medical- and γ-defectoscopy) were discussed during the first plenary session.
Section: Electron Accelerators for Low Energies.
A discussion was held on some theoretical and experimental investigations which aim at improvement of industrially produced betatrons. A large number of lectures was devoted to the construction of electromagnets and electrical wiring diagrams. A report is given on the following details: Betatrons having an intensity of

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up to 300 r/min.m. (Current frequency 150 kilocycles).
Impulse scheme for a 25 MeV-betatron.
Impulse transformer having a transformation coefficient 10.
Development of a betatron model for 7-8 MeV of the smallest possible measurements to be used in drill holes.
The lectures held on problems of radiation emission from betatrons showed that all questions connected with this problem are solved.
With respect to the production sector it must be mentioned that an output of fused-off betatron chambers having a life of 1 000 hours may be expected within the near future.

Section for the Application of Electron Accelerators in Industry, Physics, Medical Science, and Biology.

In the field of medicine a report on the influence of 10, 15 and 25 MeV-γ-radiation exercised upon the regeneration capability of the skin was delivered. Some works dealing with radiation diseases are worth mentioning.

γ-defectoscopy with betatrons is, as may be seen from lectures, becoming more and more accurate and can be used for steel plates

of increased thickness.
Some lectures dealt with the application of particle accelerators in industrial geophysics.

Theoretical Works:

In this field especially such problems were discussed as are connected with electron capture during acceleration. The theory of electrostatic interaction is apparently confirmed. Further discussions dealt with focusing.
A report is also given on the theory and construction of a new type of accelerator for exceptionally high energies.

SOV/3-58-11-32/38

AUTHORS: Vorob'yev, A.A., Professor, and Titov, V.N., Docent

TITLE: This Was Done in a Vuz (Eto sdelano v vuze). The Betatrons of the Tomsk Polytechnical Institute (Betatrony Tomskogo politekhnicheskogo instituta)

PERIODICAL: Vestnik vysshey shkoly, 1958, Nr 11, pp 80 - 81 (USSR)

ABSTRACT: Last year, a betatron, radiating energy to a maximum of 25 Mev, was demonstrated for the first time at the "Higher School's" pavilion of the All-Union Industrial Fair. The device was designed by the Tomsk Polytechnical Institute. The first betatron, radiating energy up to 5 Mev, was started at this institute in 1947. Further work in this direction produced an economical device of versatile application. Docent V.S. Melikhov suggested an original theory of seizing the electrons while speeding up, which was experimentally confirmed. Docent B.N. Rodimov examined problems of interaction of electrons in a pencil at the moment of injection and their first revolutions. Docent V.N. Titov realized an electric process of injecting the electrons. The department's scientific workers Docents A.K. Potuzhnyy, V.N. Titov and M.F. Filippov worked out the economic technology of making electromagnets for betatrons. In 1956, the Can-

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This Was Done in a Vuz. The Betatrons of the Tomsk Polytechnical Institute

didates of Technical Sciences B.A. Kononov and L.A. Sokolov succeeded in leading out a pencil of accelerated electrons from the betatron's chamber by two different methods. From 1948 - 1955, a series of betatrons with a maximum radiation energy of up to 15 Mev was manufactured at the Institute laboratories. From 1955 - 1958, the Institute built several betatrons with a radiation energy of up to 25 Mev. The article contains information on the recipients of these betatrons. Instructor V.I. Gorbunov developed a practical method of detecting defects in steel articles of considerable thickness by means of betatron radiation with an energy of up to 20 - 30 Mev. There are 3 photos.

ASSOCIATION: Tomskiy politekhnicheskiy institut imeni S.M. Kirova (Tomsk Polytechnical Institute imeni S.M. Kirov)

66536

21.2200 SOV/144-59-1-16/21

AUTHORS: Anan'yev, L.M., Cand.Tech.Sci., Docent; Volkov, M.N., Dr.Chem.Sci.; Vorob'yev, A.A., Dr.Physico-Mathematical Sci., Professor, Director of Tomsk Polytechnical Inst.; Titov, V.N., Cand.Tech.Sci., Docent; Filippov, M.F., Cand.Tech.Sci., Docent.

TITLE: Development of Electron Accelerators at the Tomsk Polytechnical Institute

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1959, Nr 1, pp 121-124 (USSR)

ABSTRACT: Work on electron accelerators at the Tomsk Polytechnical Institute was begun in 1946. The aim was to produce an inexpensive betatron installation, simple in manufacture and operation. In spite of the fact that many scientists and engineers maintained that the betatron must be supplied at a highly stable voltage, the authors developed a betatron using a supply derived from the a.c. mains. Changes in frequency and voltage had to be compensated automatically, and experiments have shown that this is possible. The fact that the betatron was supplied from industrial-frequency mains meant that the installation was very inexpensive. The second important

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contribution to betatron construction was the design and proportioning of parts of the machine and its parameters, which was done bearing in mind both technical and economical considerations. Theories were developed leading to formulae which are extremely convenient and time-saving in the adjustment of betatrons. Efforts were made to reduce the overall dimensions of betatrons. M.F. Filippov has developed a special yoke which ensures high azimuthal phase uniformity of the magnetic field. In 1946 V.N. Titov developed some very simple methods of injection and deflection. A betatron has been constructed, working on 150 c/s, in which both half-periods of the magnetic field are used to accelerate the electrons. At the point of intersection of the beams from two targets of such a betatron the intensity is 300 roentgens per minute at one metre. V.A. Moskalev and Yu.M. Akimov developed a stereo-betatron having a common magnetic circuit with two pairs of poles and two air gaps, giving effectively two accelerating chambers. This stereo-betatron may be used in medicine for deep irradiations and in radiographic

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flaw-detection in order to obtain stereo-photographs. B.A. Konokov and L.S. Sokolov developed methods for the extraction of the electron beam both by deflecting the electrons by an electric field and by removing the electrons beyond the magnetic field by means of non-magnetic channels. B.N. Rodimov and others have considered the acceleration process from the theoretical point of view. Since 1954 the Institute has been concerned with the development of powerful electron synchrotrons.
There are no figures, tables or references.

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ASSOCIATION: Tomskiy politekhnicheskiy institut (Tomsk Polytechnical Institute)

Dr. Volkov is a Departmental Head at the Ministry of Higher Education, SSSR. (Nachal'nik otdela MVO SSSR)

S/139/60/000/01/041/041
E201/E391

AUTHOR: Titov, V.N.

TITLE: Conference on Electron Accelerators 19

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, Nr 1, pp 241 - 243 (USSR)

ABSTRACT: The Third All-Union Scientific Inter-university Conference on Electron Accelerators and their Practical Applications took place at the beginning of September, 1959, at the Tomsk Polytechnical Institute. Over 150 papers were presented at the Conference.
At the first (plenary) session Professor A.A. Vorob'yev (TPI) surveyed the state of the electron accelerator science and technology and made suggestions for future development.
Professor A.A. Sokolov (MGU) read a paper on "The Problem of Parity Conservation".
Candidate of Medical Sciences G.P. Garganeyev, Tomsk Medical Institute (TMI) described the first results obtained with the 25 MeV betatron, used to produce hard X-rays for investigation of their effects on living organisms.
During the remainder of the conference papers were read at five specialist sections.

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Conference on Electron Accelerators

In the theoretical section Professor A.A. Sokolov and I.M. Ternov (MGU) read a paper on "The Effect of Quantum Fluctuations on Motion of Electrons in Cyclic Accelerators"; A.N. Matveyev (MGU) presented his paper on "The Effect of Electron Losses Due to Scattering on Residual Gases in Synchrotrons".
Over 50 papers were presented in the section on cyclic electron accelerators.
Workers of the Tomsk Polytechnical Institute reported a new type of industrial betatron with 30 MeV energy. Yu.M. Akimov and V.A. Moskalev (Tomsk Polytechnical Institute) described construction of a new two-chamber betatron ("stereobetatron").
G.A. Kabanov, Ye.M. Belov and V.N. Titov (Tomsk Polytechnical Institute) discussed stabilization of γ-radiation produced by betatrons.
Instruments for measuring magnetic fields were described by V.S. Shirchenko (Physics Institute of the Ac.Sc., USSR FIAN) and by V.N. Yeponeshnikov, V.P. Kirillov and V.N. Kuzmin (Tomsk Polytechnical Institute).

S/139/60/000/01/041/041
E201/E391

Conference on Electron Accelerators

Fifteen papers were presented in the section on high-voltage and waveguide accelerators.
A.F. Kalganov (Tomsk Polytechnical Institute) described a new rotor-type electrostatic generator.
Interesting papers were presented by V.V. Rumyantsev (Leningrad) and A.N. Fisum (Khar'kov) on travelling-wave linear electron accelerators with energies from 5 to 30-35 MeV.
B.N. Morozov and Ye.V. Padusova (Tomsk Polytechnical Institute) read a paper on "The Dispersion Properties of Curved Diaphragmed Waveguides of Rectangular Cross-section."
Classification of cophased waves in rectangular waveguides was discussed by Ye.S. Kovalenko (Tomsk Polytechnical Institute).
A.M. Shenderovich (UFTI, Khar'kov) presented two papers on air-spark discharge gaps and their uses in modulation of large current pulses.
The most interesting and numerous papers were presented in the section on the applications of electron accelerators in industry, medicine, biology and physics.

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S/139/60/000/01/041/041
E201/E391

Conference on Electron Accelerators

Important work on treatment of cancer and sarcoma with betatron radiations has been done under the direction of Academician A.G. Savinykh, Professor I.V. Toroptsev, Professor K.N. Zivert and others.
Papers on treatment of cancer were presented by the following workers of the Tomsk Medical Institute: Docent A.V. Borozdina, M.P. Lisovskaya, Professor B.S. Poyzner, G.T. Ishchenko and N.D. Gerasimova.
Some genetic effects of ionizing radiations were described by A.D. Proshina (Tomsk Medical Institute).
The youngest participant, fourth-year student of the Tomsk Medical Institute, L.F. Boginich, described the changes produced in human blood serum by betatron irradiation.
Academician A.G. Savinykh, Professor I.V. Toroptsev and Professor B.S. Poyzner took part in discussion of the medical applications of electron accelerators.
Workers of Tomsk State University described investigations of electrical properties of some materials. Workers of the All-Union Scientific-research Institute for Geophysics

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S/139/60/000/01/041/041
E201/E391

Conference on Electron Accelerators

described the use of particle accelerators in geophysical work in mining and in oil industries.
Workers of Tomsk Polytechnical Institute described a design of a small-size betatron for lowering into a borehole and a high-voltage supply of small dimensions for use with a neutron source in geophysical work.
The conference passed a resolution asking the GNTK of the Council of Ministers of the USSR to speed up the introduction of electron accelerators into various sectors of national economy.
Papers presented at the conference will by published by the Tomsk State University.
The next (fourth) conference on electron accelerators will take place in Tomsk in February, 1962.

ASSOCIATION: Tomsk politekhnicheskiy institut imeni S.M. Kirova
(Tomsk Polytechnical Institute imeni S.M. Kirov)

SUBMITTED: September 25, 1959

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06540
SOV/142-2-2-16/25

9(2,3)
AUTHORS: Vorob'yev, A.A., Solntsev, B.A., and Titov, V.N.

TITLE: The Application of an Electrode Electric Field for Electron Acceleration in a Synchrotron

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika, 1959, Vol 2, Nr 2, pp 246-247 (USSR)

ABSTRACT: Coaxial cavity resonators found the most wide-spread application as electron accelerators in electron synchrotrons with annular electromagnets. They were first used by F.K. Goward and D.E. Barnes in 1946. Resonators of this type occupy a part of the pole gap of the electromagnet. Therefore, the outer conductor cannot have sufficiently large dimensions compared to the inner one. Further, bending of the resonator cannot be avoided. These conditions reduce the resonance to a considerable degree. The introduction of high-quality dielectrics into the resonator cavity [Ref 1, 2, 3] does not produce a considerable increase of the parallel resistance. In 1948, at the Tomskiy politekhnicheskiy institut imeni S.M. Kirova (Tomsk Poly-

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The Application of an Electrode Electric Field for Electron Acceleration in a Synchrotron

technic Institute imeni S.M. Kirov) the suggestion was made to use for electron acceleration the electric field created in a gap between conductive coatings inside the chamber, as shown by figure 1. With a sufficient thickness of the conductive layer, the configuration of the electric field will not be different from the shape of the field created in the accelerating gap of a coaxial resonator. In 1955, a 20 mev synchrotron was built at the Tomsk Polytechnic Institute with the application of the aforementioned electrodes. For feeding high frequency power to the accelerating gap two metal rings were used which were placed on the accelerating chamber, as shown by figure 2. The capacitance component of the input impedance of the device was compensated by a parallel-connected inductance, as shown by the equivalent circuit in figure 3. The aforementioned device occupies little space in the pole gap of the accelerating electromagnet and provides optimum operating conditions. The

The Application of an Electrode Electric Field for Electron Acceleration in a Synchrotron

parallel resistance of the accelerating gap may be higher than with coaxial resonators. Frequency adjustments may be easily made. Special matching and balancing systems for the coupling with the HP generator are not required. The manufacture of such an accelerating device is considerably simpler than that of other accelerators. Figure 4 shows a general view of the accelerating device in the chamber. The electromagnet of the 15 mev betatron of the Tomsk Polytechnic Institute provided the magnetic field. The accelerating device was excited by a push-pull generator, composed of metal-ceramic tubes GI-12B, producing approximately 20 watts at a frequency of 350 mc. With such a power, 150 volts were obtained at the accelerating gap. The basic characteristics of the synchrotron with this accelerating device were the same as those obtained with a coaxial resonator. The gamma radiation had an intensity of 2 roentgen at 1 m

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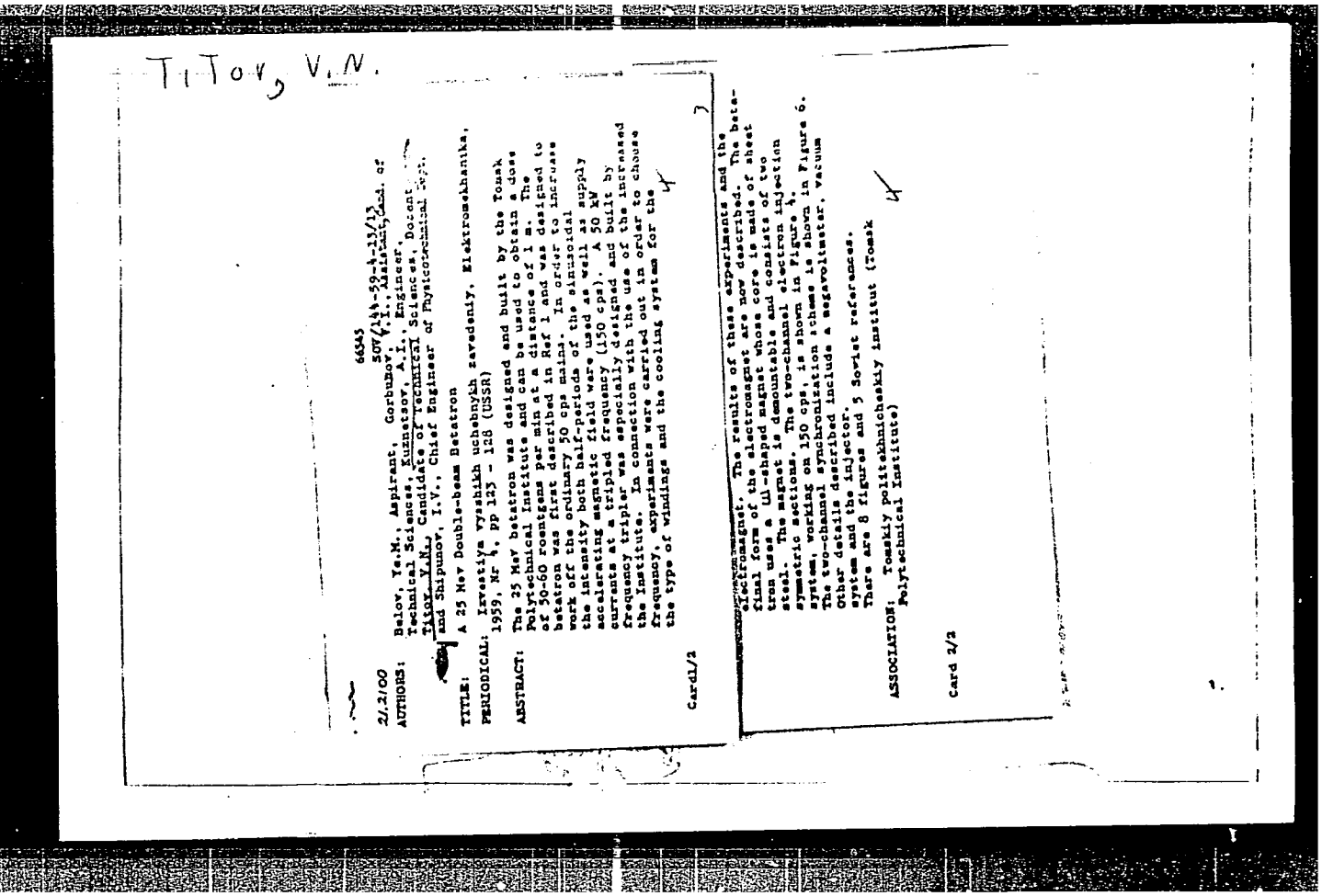
distance from the target. There are 2 diagrams, 1 photograph, 1 circuit diagram and 3 references, 1 of which is Soviet and 2 English.

This article was recommended by the Nauchno-issledovatel'skiy institut yadernykh issledovaniy, elektroniki i avtomatiki pri Tomskom politekhnicheskom institute imeni S.M. Kirova (Scientific Research Institute for Nuclear Research, Electronics and Automation at the Tomsk Polytechnic Institute imeni S.M. Kirov).

SUBMITTED: July 11, 1958



Titov, V.N.

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AUTHORS: Belov, Ye.M., Aspirant; Gorbunov, V.I., Assistant; Kuznetsov, A.I., Engineer, Docent; Titov, V.N., Candidate of Technical Sciences; and Shipunov, I.V., Chief Engineer of Physicochemical Dept.

TITLE: A 25 Mev Double-beam Betatron

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1959, Nr 4, pp 125 - 128 (USSR)

ABSTRACT: The 25 Mev betatron was designed and built by the Tomsk Polytechnical Institute and can be used to obtain a dose of 30-60 roentgens per min at a distance of 1 m. The betatron was first described in Ref 1 and was designed to work off the ordinary 50 cps mains. In order to increase the intensity both half-periods of the sinusoidal accelerating magnetic field were used as well as supply currents at a tripled frequency (150 cps). A 50 kW frequency tripler was especially designed and built by the Institute. In connection with the use of the increased frequency, experiments were carried out in order to choose the type of windings and the cooling system for the

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electromagnet. The results of these experiments and the final form of the electromagnet are now described. The betatron uses a UI-shaped magnet whose core is made of sheet steel. The magnet is demountable and consists of two symmetric sections. The two-channel electron injection system, working on 150 cps, is shown in Figure 6. The two-channel synchronization scheme is shown in Figure 6. Other details described include a magnetic voltmeter, vacuum system and the injector. There are 8 figures and 5 Soviet references.

ASSOCIATION: Tomskiy politekhnicheskiy institut (Tomsk Polytechnical Institute)

Card 2/2

Titov, V.N.

SOV/144-59-5-13/14

AUTHORS: Deryuga, I.P., Assistant, Kovylin, Yu.Ya., Senior Lecturer, Mal'tsev, P.T., Senior Lecturer, Hurin, A.V., Assistant, Surkov, G.V., Assistant, Titov, V.N., Candidate of Technical Sciences, Docent, Emel'yanov, A.I., Senior Lecturer.

TITLE: An Installation for the Displacement of a Betatron Electromagnet

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1959, Nr 5, pp 110 - 113 (USSR)

ABSTRACT: In practice it is often necessary to displace the betatron electromagnet both in the vertical and horizontal direction, and also to carry out a rotation about a horizontal axis. The authors state that Western literature (Refs 1 - 4) does not give sufficient detail of how this is carried out. The Tomsk Polytechnical Institute has therefore designed and built an installation which may be used to displace the betatron electromagnet in the above way.

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The magnet is raised or lowered (Figure 1) with the aid of motor driven screws 1. It may be rotated with the aid of another motor driven screw 7, and displaced in a horizontal direction on a pair of rails on which the wheels 14 run. The maximum vertical displacement is 1000 mm and the displacement can be carried out at the rate of 0.36 m/min. The maximum angular displacement of the electromagnet is 60° and the maximum horizontal displacement is unlimited. The rate of the angular displacement is 0.124 - 0.106 rev/min and the rate of the horizontal displacement is 0.55 m/min. The weight of the installation is 3.5 tons. There are 2 figures and 5 references, of which 3 are English, 1 is German and 1 is Soviet.

ASSOCIATION: Kafedra prikladnoy mekhaniki, Tomskiy politekhnicheskiy institut (Chair of Applied Mechanics, Tomsk Polytechnical Institute)

Card 2/2

SOV/144-59-7-14/17

AUTHORS: Klyukin, A.F. (Engineer) and Titov, V.N. (In charge of the Chair (Acting) in the Physico-Technical Faculty)

TITLE: Static Frequency-Trebling of the Current for Feeding the Winding of a Betatron Electromagnet

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1959, Nr 7, pp 99-103 (USSR)

ABSTRACT: Two units have been constructed with powers of 2 kW and 15 kW respectively, trebling from 50 to 150 c/s. The circuit of Fig 1 in which 3 single-phase transformers have their primaries in star and their secondaries connected in series, has been known since 1912 (Ref 1). Until now no completely satisfactory design method has appeared. Starting with the proposals made by L.L. Rozhanskiy (Refs 6,7,8), a 2 kW design was attempted. The core material was 0.35 mm type E42 steel. The core cross-section was 64 cm and the primary and secondary turns were 86 and 65 respectively. The table on p 100 compares the calculated and measured performances. The power output and working voltage are less than expected. Fig 2 shows the output power and voltage and input power factor plotted against secondary current. When used with a

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Static Frequency-Trebling of the Current for Feeding the Winding of a Betatron Electromagnet

5 MeV betatron the power output could be increased to 2.4 kW by increasing the capacitance in the tuned circuit. Fig 3 shows the effect of capacitance on output power, current and voltage. The experimental data was used to correct the design formulae by deriving coefficients k_1 and k_2 which are the ratios respectively of open-circuit to working voltage and short-circuit to working current. These are given in Fig 4 as a function of induction. The relation between secondary and primary currents determines the correct section of conductor and the value of the induced e.m.f. determines the core-section. Fig 5 compares the calculated and measured results when the anticipations of the former have been corrected. The agreement is good. The following data is required to carry out a design: core material, primary voltage, maximum output power, optimum output working voltage, optimum output current. The calculations are made in the following order, the numbers corresponding to the formulae on pp 102-103. 1, Choose working flux-density; 2, Find core-section; 3, Calculate primary turns; 4, Calculate secondary turns; 5, Find magnetizing current;

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6, Find primary short-circuit current; 7, Calculate low-frequency current on open-circuit; 8, Find wire-section. The table on p 103 compares calculated and measured performances of a 15 kW design. The low-frequency current on open circuit could be reduced from 130 to 20÷30 amperes by power-factor correction.
There are 5 figures, 2 tables and 9 references, 5 of which are Soviet, 3 English and 1 Italian.

ASSOCIATION: Fiziko-tekhnicheskiy fakul'tet, Tomskiy politekhnicheskiy institut (Physico-Technical Department, Tomsk Polytechnical Institute)

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E140/E463

AUTHORS: Belov, Ye.M. and Titov, V.N.

TITLE: Betatron[19] Gamma-Radiation Stabilizer

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika, 1960, Nr 1, pp 94-99 (USSR)

ABSTRACT: The stabilizer is based on the principle of automatic phase control of the injection pulse. It realizes almost instantaneous correction at a radiation level of 95 to 97% of maximum with variation of any destabilization factors. It consists of a photomultiplier detector with cathode follower, voltage amplifier, amplitude discriminator, integrating circuit, phase-inverter, power amplifier, trigger circuit, cathode follower and controlled multivibrator. It may operate as a self-triggered time base of a DC amplifier. The sawtooth waveform controls the phase or injection pulse generation over the required limits. The experimental results are given in Fig 3 to 5. They show the difference between regulated and non-regulated relative outputs against phase variation, current and injection voltage respectively. At the present time,

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Betatron Gamma-Radiation Stabilizer

the authors are developing a further instrument for operation at maximum radiation intensity. There are 5 figures and 6 references, 4 of which are Soviet and 2 English.

SUBMITTED: June 3, 1959

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Card 2/2

TITOV, V.N.

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(Railroads--Earthwork)

VIKTOROV, I.I., kand. tekhn. nauk; TITOV, V.P., kand. tekhn. nauk;
LEBEDEV, V.A., inzh.

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TITOV, V.P.

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